

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. - 12. (Cancelled)

¹
~~13.~~ (Currently Amended) An illumination optical device for illuminating an irradiated plane with light from a light source supplying pulse laser light, comprising:

a diffractive optical element arranged in an optical path between the light source and the irradiated plane, wherein

an optical material forming the diffractive optical element includes an oxide crystal material, an optic axis of the oxide crystal material is set approximately parallel to an optical axis of the illumination optical device; and

the diffractive optical element has a surface shape formed on the oxide crystal material.

²
~~14.~~ (Previously Presented) The illumination optical device according to claim ~~13~~, wherein the diffractive optical element is arranged in the optical path between the light source and the irradiated plane, through which a light beam passes having an energy density of 1 mJ/cm²/pulse or more.

³
~~15.~~ (Previously Presented) The illumination optical device according to claim ~~13~~, wherein the oxide crystal material is one of quartz crystal (SiO₂), barium titanate (BaTiO₃), titanium trioxide (TiO₃), magnesium oxide (MgO), and sapphire (Al₂O₃).

16. (Cancelled)

⁴
~~17.~~ (Currently Amended) The illumination optical device according to ~~claim 16~~ ³
claim 15, wherein the surface shape of the diffractive optical element is formed by dry etching.